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Symptomatic Ventromedial Scapular Osteochondroma Presenting with Restriction of Shoulder Movements: A Case Report

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Learning Point of the Article:

Ventromedial scapular osteochondroma is a rare but important cause of mechanical shoulder restriction, and complete excision leads to excellent functional recovery.

Abstract

Introduction: Ventromedial scapular osteochondroma is an uncommon cause of scapulothoracic impingement and shoulder restriction in children. Because of its deep anatomical location, diagnosis is often delayed, particularly in pediatric patients with minimal symptoms.

Case Report: A 9-year-old male presented with a gradually progressive, painless swelling over the left scapular region associated with difficulty in overhead shoulder movements for 1 year. Clinical examination revealed a firm, immobile bony mass over the posterior scapula with terminal restriction of shoulder abduction and forward elevation. Computed tomography demonstrated a pedunculated osteochondroma arising from the ventromedial surface of the scapula. The lesion was excised completely through a posterior approach. Postoperatively, the patient demonstrated marked improvement in shoulder range of motion with return to normal daily activities.

Conclusion: Timely surgical excision restores shoulder function and prevents progression of mechanical symptoms. Although rare, ventromedial scapular osteochondroma should be considered in the differential diagnosis of restricted shoulder mobility with unexplained scapular prominence in children, where it may mimic snapping scapula syndrome.

Keywords: Osteochondroma, scapula, ventromedial scapula, shoulder restriction, case report, pediatric orthopedics.

Introduction

Ventromedial scapular osteochondromas may cause symptoms related to scapulothoracic articulation, including snapping, crepitus, pain, or mechanical restriction of shoulder movements. Because these symptoms are often attributed to muscular or postural causes, diagnosis is frequently delayed, especially in pediatric patients [1,2]. Awareness of this entity is therefore essential for orthopedic surgeons evaluating children with unexplained scapular swelling or shoulder dysfunction.

Osteochondroma is the most common benign bone tumor, accounting for nearly one-third of all benign osseous neoplasms. It is characterized by a cartilage-capped bony projection that arises from the external surface of bone, maintaining continuity with the underlying cortex and medullary canal. These lesions typically develop during periods of skeletal growth and usually cease to enlarge after physeal closure. The majority of osteochondromas involve the metaphyseal regions of long bones such as the distal femur, proximal tibia, and proximal humerus. In contrast, involvement of flat bones is uncommon, with the scapula representing a rare site [3,4]. Scapular osteochondromas

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Author's Photo Gallery


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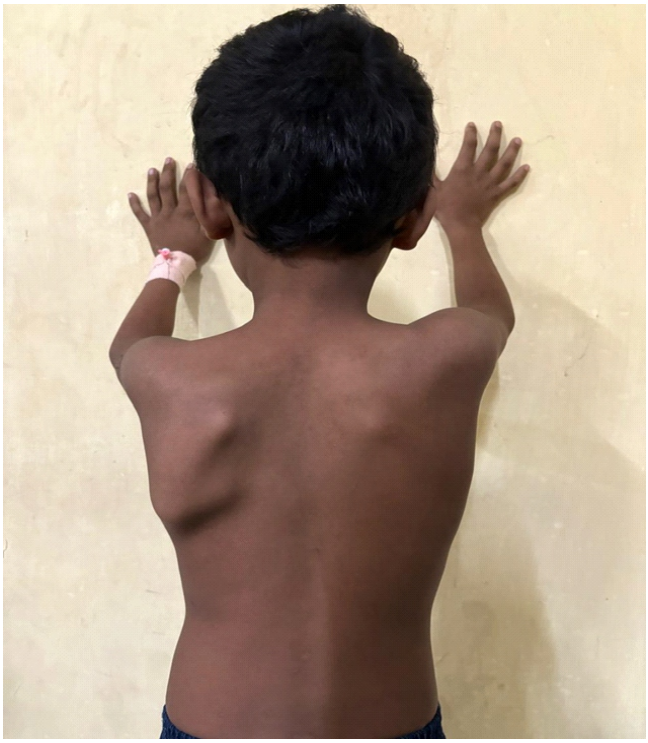

Figure 1: Pre-operative scapular prominence. Pre-operative clinical photograph of the patient in standing position, posterior view, showing a visible bony prominence over the left scapular region. The image demonstrates asymmetry of the left scapula during shoulder positioning prior to surgical intervention.

constitute a small fraction of cases, and lesions arising from the ventromedial surface are particularly rare.

Previous reports have shown that scapular osteochondromas are most commonly present with mechanical symptoms related to scapulothoracic impingement, including restricted shoulder elevation, snapping scapula syndrome, or cosmetic deformity. Imaging plays a crucial role in confirming diagnosis and surgical planning [5]. Complete excision, including removal of the cartilage cap, has been consistently associated with excellent functional outcomes and low recurrence rates.

Case Report

A 9-year-old male presented with a gradually progressive, painless swelling over the left scapular region for approximately 1 year, associated with increasing difficulty in performing overhead activities. There was no history of trauma, constitutional symptoms, or similar complaints among family members. The patient primarily reported mechanical restriction during shoulder elevation, without pain at rest.

Clinical examination

Inspection – A firm, immobile bony mass over the posterior aspect of the left scapula, with a visible winging-like prominence of the left scapula during rest, which became more pronounced during abduction. Palpation – A hard, non-tender, immobile mass was palpable deep to the medial border of the scapula. Range of motion – Terminal restriction was noted in forward elevation (150°) and abduction (140°). External and internal rotations were preserved. The presentation was consistent with pseudo-winging due to a scapulothoracic lesion (Fig. 1). Neurological status – distal neurovascular status and long thoracic nerve function were intact.

Investigations

Initial X-rays were suggestive but inconclusive due to the overlapping of the rib cage. Computed tomography of the left scapula demonstrated a well-defined, pedunculated bony lesion arising from the ventromedial surface, with continuity of cortical and medullary bone, consistent with an osteochondroma (Fig. 2). In view of the progressive mechanical symptoms and clear radiological correlation, surgical excision was considered the most appropriate management option.

Surgical treatment

Under general anesthesia, the patient was placed in a prone "chicken-wing" position (arm internally rotated and backward)

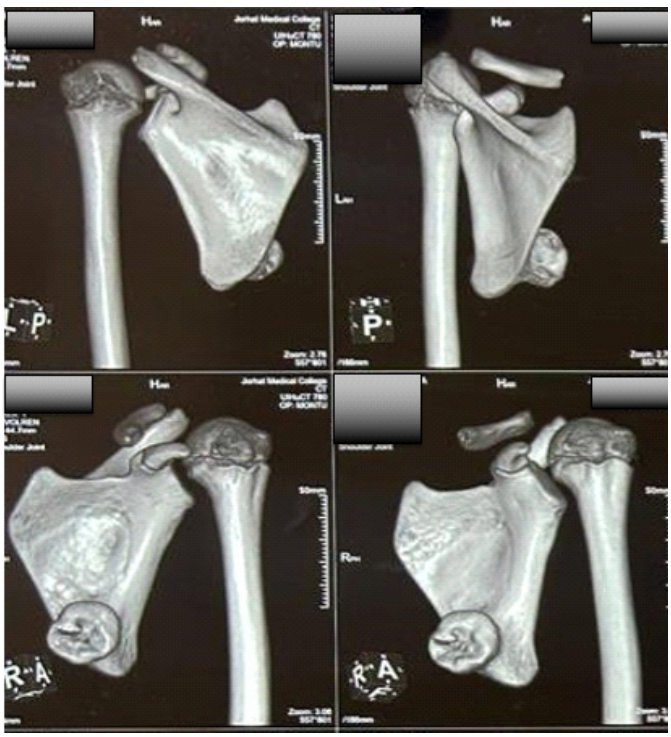

Figure 2: Computed tomography of ventromedial scapular osteochondroma. Pre-operative computed tomography scan of the left scapula with three-dimensional reconstruction, demonstrating a well-defined pedunculated bony outgrowth arising from the ventromedial surface of the scapula, consistent with osteochondroma, obtained during pre-operative evaluation.

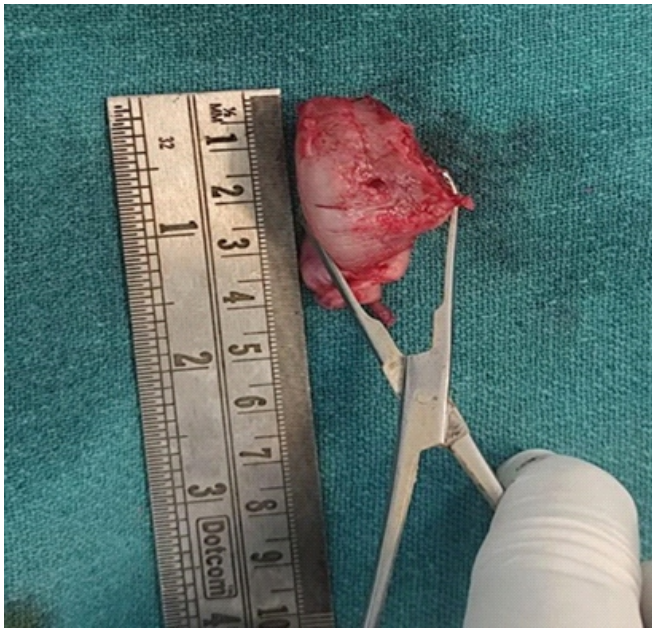

Figure 3: Excised osteochondroma specimen showing length. Gross specimen photograph of the excised osteochondroma placed on the operative table, demonstrating the cartilaginous cap and underlying bony stalk immediately after surgical removal. The specimen is oriented to demonstrate the longitudinal dimension 4 cm of the lesion.

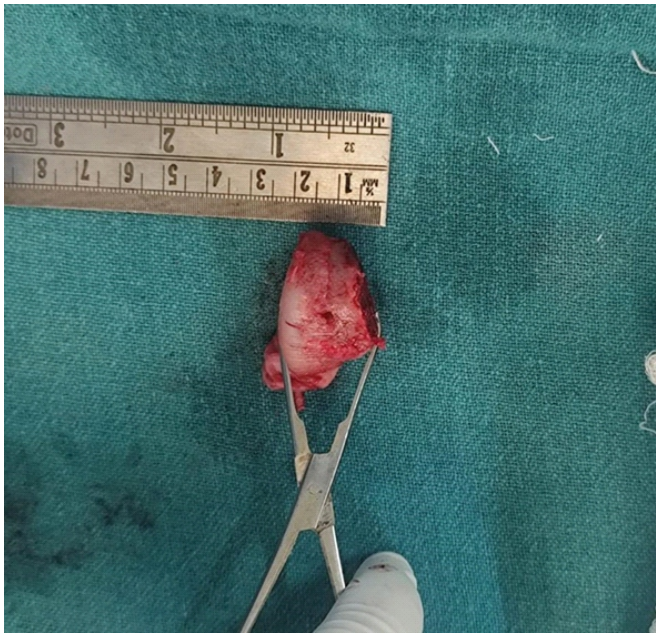

Figure 4: Excised osteochondroma specimen showing breadth. Gross specimen photograph of the excised osteochondroma placed on the operative table, demonstrating the cartilaginous cap and underlying bony stalk immediately after surgical removal. The specimen is oriented to demonstrate the transverse dimension 2.4 cm of the lesion.

to distract the scapula from the chest wall. A longitudinal incision was made along the medial border of the scapula. The trapezius and rhomboids were retracted. The lesion was identified on the costal surface. An en bloc excision was performed at the base of the stalk using an osteotome. Special care was taken to excise the entire cartilaginous cap to minimize the risk of recurrence. The excised specimen was consistent with osteochondroma on gross examination (Fig. 3 & 4). The post-operative period was uneventful.

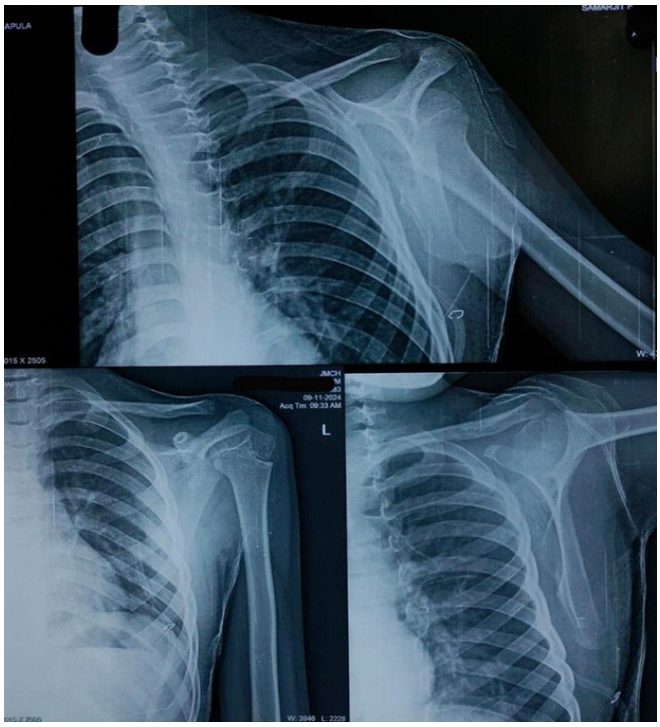

Figure 5: Immediate post-operative shoulder radiograph. Immediate post-operative radiograph of the left shoulder in anteroposterior view, obtained following surgical excision, confirming complete removal of the scapular lesion with restoration of normal scapular contour.

Follow up

Histopathology confirmed the diagnosis of a benign osteochondroma with no evidence of malignant transformation. At 6-week follow-up, the surgical wound had healed satisfactorily, with restoration of scapular contour and significant improvement in shoulder range of motion. Post-operative radiographs confirmed complete excision lesion (Fig. 5), and clinical evaluation at 6 weeks showed restoration of scapular contour (Fig. 6), the patient returned to routine activities without restriction.

Discussion

Osteochondromas involving the scapula are rare, and ventromedial lesions are particularly uncommon due to the flat anatomy and extensive muscular coverage of this region; these lesions represent benign developmental lesions that may arise at atypical skeletal sites with characteristic histopathological

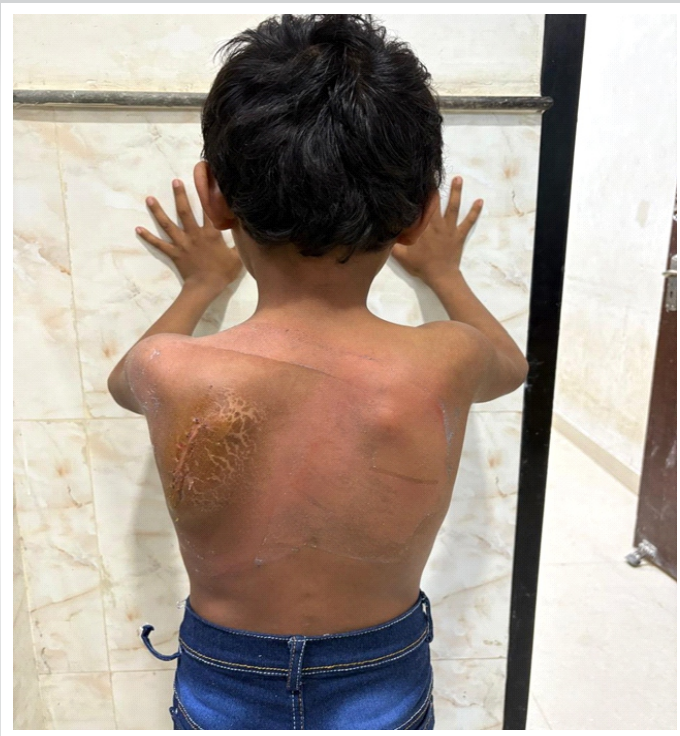

Figure 6: Six-week post-operative clinical outcome. Post-operative clinical photograph of the patient in standing position, posterior view, taken 6 weeks after surgery, showing resolution of scapular prominence with satisfactory cosmetic appearance and restoration of shoulder function.

features confirming their non-neoplastic nature [6,7]. The clinical presentation of ventromedial scapular osteochondroma may mimic other causes of scapulothoracic dysfunction, including snapping scapula syndrome, scapulothoracic bursitis, or muscular imbalance. As seen in our case, clinical presentation often mimics "pseudo-winging." While plain radiographs (specifically the "Scapular Y" view) can identify the lesion, three-dimensional computed tomography is particularly useful for defining the stalk's orientation and its proximity to the thoracic cage, which is vital for safe surgical clearance.

In our patient, excision of the ventromedial lesion led to resolution of pseudo-winging and unrestricted overhead activity, mirroring outcomes reported in previous pediatric cases. The "chicken-wing" positioning is crucial for access. We recommend a posterior approach along the medial border as it provides the safest corridor to the ventromedial surface while minimizing damage to the serratus anterior and long thoracic nerve. This case emphasizes the need to consider ventromedial scapular osteochondroma in children presenting with unexplained scapular swelling or shoulder movement restriction. Complete excision of the cartilage cap is critical to avoid recurrence [8,9,10]. Longer follow up is planned to monitor recurrence and functional outcomes.

A review of the PubMed/Medline literature indicates that symptomatic scapular osteochondromas are most effectively managed with complete surgical excision. Complete removal of the cartilage cap is essential to prevent recurrence. Various surgical approaches have been described, with the choice guided by lesion location and surgeon preference.

Conclusion

This case demonstrates ventromedial scapular osteochondroma as a rare but clinically significant cause of mechanical shoulder restriction in children. The report highlights the diagnostic challenge posed by its deep anatomical location and non-specific presentation, which can lead to delayed recognition. Our findings emphasize that early diagnosis using appropriate cross-sectional imaging, followed by complete surgical excision including the cartilage cap, results in excellent functional and cosmetic outcomes. This case contributes to existing orthopedic literature by reinforcing the need for a high index of suspicion in pediatric patients with unexplained scapular prominence and restricted shoulder motion, thereby advancing clinical understanding of this uncommon pathology and its optimal surgical management.

Clinical Message

Ventromedial scapular osteochondroma is an uncommon cause of mechanical shoulder restriction in children. This case underscores the need for early consideration of ventromedial scapular osteochondroma in children presenting with unexplained scapular prominence and restricted shoulder movement, as recognition of this rare lesion allows timely referral for surgical management, thereby reducing symptom duration and avoiding repeated or unnecessary investigations.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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